

REMARKS

Favorable review is requested in view of the following remarks. Claims 1-16 are pending in the application, with claims 13-16 being withdrawn from consideration. Applicants request that the non-elected claims be maintained and reinstated if amended to track allowed subject matter of the elected claims.

Rejection under 35 U.S.C. § 103

Claims 1-3, 5, 6, and 10-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 4-45811 (JP '811) in view of U.S. Patent No. 6,090,731 (Pike et al.). Applicants respectfully traverse this rejection, and respectively request reconsideration in view of the following comments.

Claim 1 is directed to a filter cartridge and requires that at least a part of fiber intersections be thermally adhered by a thermal compression bonding method. In contrast, the filter medium of Pike et al. is through-air bonded. *See* column 3, lines 61 - 63 of Pike et al. More specifically, Pike et al. provide that the filter medium of Pike et al. is not calender bonded. *See id.* Calender bonding is a specific type of thermal compression bonding. In fact, Pike et al. state that:

the filter efficiency of these spunbond filter media is, in general, significantly lower than that of microfiber filter media. In addition, the porosity distribution on the surface of the calendered spunbond media tends to be non-uniform.

Column 2, lines 8-13.

By these statements, Pike et al. clearly teach away from using thermal compression bonding, as recited in claim 1. Thus, contrary to the Examiner's assertion, it would not be obvious to modify JP '811 to "provide strips of filter media having high filtration efficiency and high physical strength properties." Indeed, in view of the teaching of Pike et al., one would expect "significantly lower" filtration efficiency if JP '811 was modified by Pike et al. to include thermal compression bonding.

In addition, Pike et al. does not refer to or suggest that the spunbond filter media could be used in a filter cartridge—rather it only discusses spunbond filter media as a sheet filter.

For all these reasons, there would be no motivation to combine JP '811 with Pike et al. as suggested by the Examiner to arrive at the present invention. Accordingly, Applicants respectfully request that the rejection be withdrawn.

In addition, Applicants have shown through experimentation that the present claimed invention produces unexpected results, which rebut prima facie obviousness. *See* the previously filed YAMAGUCHI Declaration and MPEP § 716.02(a). A comparative experiment was performed between the filter cartridges used for examples 4 and 11 of the present invention and that of Pike et al. The results and experimentation are explained in detail in the previously filed YAMAGUCHI Declaration. In summary, the filter life of the present invention was much longer than that of Pike et al., which is an unexpected result. *See* page 3 of the YAMAGUCHI Declaration. In particular, the filter life of Example 11 of the present invention is over 200 times longer than that of Example 5 in Pike et al.

The Examiner has asserted that these unexpected results are not persuasive because they compare the performance of a wound filter with the sheet filter of Pike et al. Applicants respectfully disagree. Pike et al. disclose a sheet filter, not a wound filter. The Examiner has suggested that it would be obvious to use the teachings of Pike et al. to arrive at the wound filter of the present invention. The unexpected results of the present invention versus the teachings of Pike et al., the reference cited in the rejection, strongly rebut the obviousness of the asserted combination.

Moreover, Applicants respectfully point out that the present invention also exhibits superior properties to JP '811. The filter cartridge described for Comparative Example 3 of the present application (see page 46 of the specification) is analogous to that of JP '811. The initial trapped particle diameters of Comparative Example 3 and Example 20 are 10.1 and 10.0 μm , respectively, which are almost identical. *See* Table 2 of the specification. However, the initial pressure loss, trapped particle diameter in 0.2 MPa, and filter life of Comparative Example 3 are 0.010 MPa, 13 μm , and 80 minutes, respectively. Whereas, the initial pressure loss, trapped

particle diameter in 0.2 MPa, and filter life of Example 20 are 0.003 MPa, 10 μ m, and 225 minutes, respectively. These characteristics represent unexpected results.

Thus, Applicants have shown unexpected results between *both* references cited by the Examiner. Accordingly, Applicants respectfully submit that the unexpected results of the present invention clearly rebut any prima facie case of obviousness established by the references, both individually and in combination. Even if Pike et al. may assert that their nonwoven filter medium is suitable for various filter applications, it provides no reason to expect that the combination of JP '811 and Pike et al. would provide the unexpected results of the present claimed invention. See column 3, lines 17 - 20 of Pike et al. It is legally incorrect to assume that the unexpected results of the present claimed invention would be inherent once the combination of JP '811 and Pike et al. is made. See Ex parte Ohsaka, 2 USPQ2d 1460 (BPAI 1987).

Accordingly, Applicants respectfully submit that claim 1 is allowable over the cited references. In addition, claims 2, 3, 5, 6, and 10-12 depend from claim 1 and are believed allowable for at least the same reasons.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '811 in view of Pike et al. and further in view of EP 831,161 (Horiguchi). Applicants respectfully traverse this rejection.

Claim 1 is believed allowable for the reasons noted above. Horiguchi does not remedy the deficiencies of JP '811 and Pike et al as noted above. Accordingly, claim 4 is believed allowable over the cited references for at least the reason that it depends from allowable claim 1. Applicants do not concede the correctness of this rejection.

Claims 7 - 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '811 in view of Pike et al. and further in view of JP 1-115423 (JP '423). Applicants respectfully traverse this rejection, and respectfully request reconsideration in view of the following comments.

Claim 1 is believed allowable for the reasons noted above. JP '423 does not remedy the deficiencies of JP '811 and Pike et al. Accordingly, claims 7-9 are believed allowable over the cited references for at least the same reasons as noted above with respect to claim 1. Applicants do not concede the correctness of this rejection.

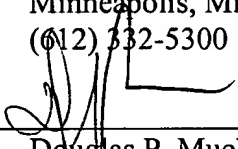
Conclusion

In view of the above amendments and remarks, favorable reconsideration in the form of a Notice of Allowance is respectfully requested. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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